

HEALTH ADVISORY SIGNS POSTED ON SOUTH CAROLINA WATER BODIES

Charles Gorman

AUTHORS: ¹The South Carolina of Health and Environmental Control, Bureau of Water.

REFERENCE: *Proceedings of the 2008 South Carolina Water Resources Conference*, held October 14-15, 2008, at the Charleston Area Event Center.

Extended Abstract

In early 2008, the South Carolina Department of Health and Environmental Control (DHEC) began posting health advisory signs on water bodies in South Carolina for two different health concerns: 1) consumption of fish with elevated levels of mercury, and 2) swimming in natural waters with elevated fecal coliform bacteria counts. The decision to post health advisory signs resulted from a stepped-up public outreach effort and not a change in water quality in the state.

The fish consumption advisory signs include a general warning not to eat fish caught from the posted water body for women who are pregnant or plan to become pregnant, nursing mothers, and children under 14-years-old. For other individuals, the signs provide fish-specific consumption recommendations of either one meal a week, one meal a month, or do not eat. The recommended consumption limits are based on the average amount of mercury detected in a fish species in a water body over a three year period, as follows: no restriction when the mercury level is less than 0.25 parts per million (ppm), one meal per week when the level is 0.25 ppm to 0.66 ppm, one meal a month when the level is 0.67 ppm to 0.99 ppm, and do not eat when the level is greater than 1.0 ppm. A meal is considered to be eight ounces of fish. A website address

and a toll-free phone number are included on the signs for additional information.

DHEC posted fish consumption advisory signs on water bodies that have fish consumption advisories for mercury. The signs are located at public boat landings with easy access to the water bodies with consumption advisories. The advisories for freshwater fish are based on data collected by DHEC as part of a statewide fish-tissue monitoring program. The advisories for saltwater fish are based on advisories issued by EPA and FDA. To date, signs have been posted at approximately 240 freshwater public boat landings and approximately 50 saltwater public boat landings.

Mercury in the environment comes from both natural and manmade sources. Methylmercury (CH₃Hg)⁺ is the form of mercury that is most easily absorbed into fish tissue and is the main cause of the high levels of mercury in fish. Most of the fish consumption advisories for mercury in South Carolina are associated with coastal plain rivers, especially "black-water rivers". The natural water chemistry of the coastal plain rivers, low pH, low dissolved oxygen and high organic content, facilitate the formation of methylmercury and contributes to higher levels of mercury being detected in the fish in these river systems as compared to other water bodies in the state.

DHEC uses the following three criteria to identify locations to receive swimming advisory signs: 1) readily accessible to the general public; 2) heavily used for primary contact recreation (i.e., full body immersion); and 3) exceeds the fecal coliform bacteria standard for primary contact recreational use as per SC Water Classifications and Standards (R.61- 68) To date, local DHEC regional staff have identified approximately 200 swimming locations that meet the first two criteria. These swimming locations are then screened against the third criteria using data from DHECs statewide ambient water-quality monitoring network. The current standard for primary contact recreation in South Carolina is ten percent of the samples from a monitoring station exceed 400 counts per 100 milliliters of water. Data from the monitoring stations nearest the swimming location are reviewed to determine the likelihood of exceeding the standard. To date, twenty swimming locations have been identified that meet all three criteria and have signs installed. A website address and a toll-free phone number are included on the signs for additional information.

High fecal coliform bacteria levels are found in many rivers in SC and throughout the nation. Fecal coliform bacteria come from the intestines of warm-blooded animals including humans, domestic animals and wild animals. While not harmful to humans, they can be used as indicators of the presence of untreated human or animal waste and associated harmful pathogens such as viruses, parasites and bacteria. Fecal coliform bacteria can enter the environment from many sources including stormwater runoff, wastewater discharges, leaking sewer lines, failing septic tanks, and domestic animals and wildlife living on or near water bodies.